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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,663	07/02/2003	Xiang Dai	200308566-1	5441

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HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/612,663

Applicant(s)

DAI ET AL.

Examiner

James M. Mitchell

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-20 is/are allowed.
- 6) ☒ Claim(s) 8,9 and 11-16 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/2/2003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Group II filed April 29, 2004 is acknowledged. Claims withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse filed April 29, 2004

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8, 9, 11-13, 15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Palaniappa et al. (U.S. 6,394,820).

Palaniappa (Fig 1B,2B, 6) discloses (cl. 1) an electronic component system and means for carrying circuit components comprising a circuit board (190), an integrated circuit, IC, (181) including an inherent substrate (i.e. wafer IC built on) having a solder column array (86), connecting the circuit package to the circuit board (Fig 6) and a lid (60) that extends outwardly over an edge of the substrate, and a plurality of supports (161, 159) with one support disposed at each corner of the IC, and being sized and shaped to leave a gap between the lid and the support in a first state (Fig 2B) and to contact and support the lid without a gap in a second state of the system (Fig 6); (claim

9) wherein the second state of the assembly includes a static compressive load (i.e. spring, 70; Col. 7, Lines 65-67) being applied to the IC package relative to the board and the first state the board bearing no load (i.e. item 70 not in contact); (cl. 11) the support includes a body (vertical, long portion of 161) and wings (horizontal portion extending from body) to be substantially perpendicular to each other for contacting edges of the substrate of the IC package; (cl. 12) the system further comprising a heat sink (Col. 4, Lines 40-41); (cl. 13) wherein each support has includes threads that position and hold the package together and therefore are detents with board including holes (179) so that each support is secured to the circuit board upon insertion of the detent into the holes (shown in (Fig 6); (cl. 15, 16) means for carrying circuit components (i.e. board), means for performing circuit functions (IC including substrate) and connecting means (i.e. solder balls, 856), means for supporting the circuit function and connecting means by leaving a gap between the circuit function performing means and circuit carrying means (Fig 2B; prior to applying force from item 70), by translating a compressive force (i.e. through item 70) from the circuit performing means to the circuit carrying means without a gap (Fig 6).

***Claim Rejections - 35 USC § 103***

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Palaniappa et al. (U.S. 6, 394, 820).

Palaniappa does not appear to show that the supports are made from at least one metal, plastic and a composite material with cte of material substantially the same as the cte of the substrate and solder column.

Examiner takes official notice that cte matching for reduced stress/delamination and forming supports/ screws from plastics, metal and composites are well known in the art. It would have been obvious to one of ordinary skill in the art to form the support/ screw of either plastic, metal and plastic and composites in order to provide a support strong enough to keep the package together, further it would have been obvious to match cte in order to decrease stress.

### ***Allowable Subject Matter***

Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 17-20 are allowable.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or make obvious the solder array configure to decrease in height including all the limitations of the independent claim.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 10:30-8:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (571) 272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jmm  
July 22, 2004



KAMAND CUNEO  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800